iowa department of environmental quality

regional office no. 6
reply to: Earl C. Voelker, Sr.
Regional Administrator
P. O. Box 27
Washington, Iowa 52353

November 20, 1978

Collis Company
2005 South 19th Street
P. O. Box 231
Clinton, Iowa 52732

ATTENTION: Mr. Richard Bell

RE: Wastewater Treatment Facility Inspection
Facility No. 23-26-1-00

Gentlemen:

Enclosed is a report of an inspection of your wastewater treatment facility conducted by Mr. Steve Hoambrecker, Environmental Engineer of this office. We believe you will find the report self-explanatory and we concur with the conclusions and recommendations.

As an aid to your use of the report, please note that the last item in the detailed report is an itemized listing of report recommendations. This summary provides a concise reference for use when discussing action on all report recommendations. We strongly encourage you to complete the necessary improvements.

If you have any questions concerning the report, please feel free to contact this office.

Sincerely,

REGIONAL PROGRAMS DIVISION

Earl C. Voelker Sr.

Earl C. Voelker, Sr.
Regional Administrator
Regional Office No. 6

XC: C&WQD - DEQ, Des Moines
EPA - Kansas City, Missouri

IOWA DEPARTMENT OF ENVIRONMENTAL QUALITY
WASTEWATER TREATMENT FACILITY INSPECTION

Page 1 of 7
23-26-1-00
Facility No.

Name of Facility: Collis Company

Name of Owner: Chamberlain Manufacturing Corporation - Collis Division

Address: P. O. Box 231

2005 South 19th Street

Clinton, Iowa 52732 Phone: 319 / 242 / 7731

Receiving Stream: Mill Creek Tributary to Mississippi River

Date This Inspection: September 13, 1978 Date, Last Inspection: July 27, 1977

Purpose: Compliance Monitoring

Design Capacity 0.570 mgd Lbs BOD PE (BOD)

Now Treating: 0.405 mgd (Avg Daily) Lbs BOD PE (BOD)

Population Served: Not Applicable % of Total %

Samples Collected: TY Type Grab [X] Lab Data Attached

Plant Description Card: [X] On File [ ] Attached to DEQ Copy

Certification Update Memo: [ ] Attached [ ] No Change in D.R.

Significant Industrial Contributors Form: [ ] Attached [ ] On File [ ] No Sig. Contr.

Responsible Operator ~~Richard~~ Robert Bell Grade General Manager

Persons Interviewed Virgil Showerman Title Plant Manager

Nello Arterburn Title Plating Superintendent

Del Tiesman Title Laboratory Technician

Inspector: Steve Hoambrecker Date of Report October 16, 1978

Reviewer: Date Reviewed 11/20/78

Treatment Process: [ ] Trickling Filter [ ] Activated Sludge, Modification
[ ] Lagoon [ ] Disinfection [ ] Other/Supplementary

Process Waste Description: Plating Wastes

I. PERMIT COMPLIANCE SUMMARY:

	SAT	MARG*	UNSAT*
A. EFFLUENT LIMITATIONS			
1. EOAP Samples — Not Required			
2. Self-Monitoring Results	X		
3. Samples this Inspection		X	
4. Visual Appearance of Effluent: Clear			
5. Visual Appearance, Receiving Stream: Clear, Somewhat Turbid			
B. SELF-MONITORING:			
1. Operation Reports Submitted	X		
2. Required Data Entered on Reports	X		
3. Testing Adequacy		X	
C. COMPLIANCE SCHEDULE:			
1. Compliance with Schedule			

2. Next Item Due: Date Due:

WQ-119

*Explain in Comments and Recommendations Section

H-1954

WASTEWATER TREATMENT FACILITY INSPECTION

23-26-1-00
Facility No.

II. FACILITY EVALUATION:

Were deficiencies noted or significant observations made during the inspection?**

ITEM	YES	NO
1. COLLECTION SYSTEM		
a. Operation & Maintenance		X
b. Physical Condition		
c. Dry Weather Capacity		
d. Infiltration/Inflow		
e. By-pass		
2. LIFT STATION(S) (COLLECTION SYSTEM)		
a. Operation & Maintenance		
b. Physical Condition		
c. Capacity		
d. Reliability/Emergency Operation		
3. INDUSTRIAL WASTE PRE-TREATMENT		
a. Waste Toxicity/Compatability		
b. Strength Reduction		
c. Affect on Treatment Plant		
4. PRE-TREATMENT UNITS (this facility)		
a. Operation & Maintenance	X	
b. Physical Condition		X
c. Capacity		X
d. Effectiveness	X	
5. PRIMARY TREATMENT		
a. Operation & Maintenance		
b. Physical Condition		
c. Capacity		
d. Sludge/Scum Removal		
e. Effectiveness		
6. SECONDARY TREATMENT		
a. Operation & Maintenance		
b. Physical Condition		
c. Capacity		
d. Recirculation		
e. Freezing		
f. Effectiveness		
7. FINAL SETTLING		
a. Operation & Maintenance		X
b. Physical Condition		X
c. Capacity		X
d. Effectiveness		X
8. SUPPLEMENTARY TREATMENT		
a. Operation & Maintenance		
b. Physical Condition		
c. Capacity		
d. Effectiveness		

ITEM	YES	NO
9. SLUDGE HANDLING AND DISPOSAL Filter Press		X
a. Operation & Maintenance		
b. Physical Condition		
c. Capacity		
d. Effectiveness		
e. Final Disposal, Solids	X	
f. Final Disposal, Liquids		
10. LAGOON STRUCTURES Sludge		
a. Maintenance	X	
b. Physical Condition		
c. Capacity	X	
d. Cell Configuration		
e. Storage/Drawdown Management	X	
11. FLOW MEASUREMENT		
A Operation & Maintenance		
b. Capacity		
c. Continuity	X	
d. Location/Method/Effectiveness	X	
12. PUMPING		
a. Operation & Maintenance		
b. Physical Condition		
c. Capacity		
d. Reliability/Emergency Operation		
13. MISCELLANEOUS		
a. Location		
b. Odors		
c. Emergency Operation		
d. By-pass(s)		
e. Equipment		
f. Buildings & Grounds		
g. Other		
14. STAFFING, OPERATOR CERTIFICATION		
a. Operator, Direct Responsibility		
b. Shift Operator(s)		
c. General Staffing		X
15. SUPPLEMENTARY		
a. Permit Availability		X
b. Operation Reports Availability		X
c. Equipment Records Maintenance		
d. Previously Noted Deficiencies		
e. Improvements		X
f. Domestic/Industrial Growth		
g. Other		

**Yes - See comments section for details
**No - No deficiencies or significant observations were noted
**Lack of Entry - Item not applicable or not observed

AGENCY OF ENVIRONMENTAL QUALITY

SANITARY LANDFILL INSPECTION [ ]
WATER SUPPLY INSPECTION [ ]
WASTEWATER TREATMENT FACILITY INSPECTION [X]
AIR QUALITY INSPECTION [ ]

23-26-1-00
Facility/Permit #

ITEM CODE	COMMENTS AND RECOMMENDATIONS
General Information	The Collis Company primarily manufactures and plates refrigerator racks for major appliance companies. Treatment of process wastes is provided with domestic wastes going to the City of Clinton wastewater treatment plant for treatment. Chromate and cyanide wastes are segregated and pumped to the waste treatment facilities. The cyanide wastes receive two stage alkaline chlorination treatment. Chromate wastes are reduced to the trivalent state with sulfur dioxide in an acidic atmosphere. Automatic ORP and pH probes are utilized in regulating the chrome reduction and cyanide oxidation processes. The pretreated cyanide and chrome wastes, in conjunction with acid and alkaline rinses are combined in a final neutralization tank. The pH of the neutralization tank is maintained at about 8.5 to allow for metal precipitation in the settling tank. The effluent from the neutralization tank is pumped to the rectangular settling basin where a polymer is added to enhance settling. The settling tank effluent is then passed through a diatomaceous earth filter discharging to Mill Creek. The sludge generated is concentrated in a filter press and presently taken to Illinois for disposal. Several small sludge lagoons are available for sludge disposal if necessary. In the first several weeks of August, 1978, during a plant shutdown, overall plant maintenance was performed, including several areas of the waste treatment system. Several plating tanks were relined. The chrome and cyanide pretreatment room had been painted. The settling basin had been drained and four portable submersible sludge pumps were placed in the weir end of the basin. Since the last inspection the Collis Company has obtained the services of a repairman capable of maintaining pollution control devices. Reliable controls have helped enable effluent limitations to be more consistently met. A new atomic absorption unit has also been added to the laboratory equipment to better monitor the effluent, as well as other waste streams within the plant.
A 3	A grab sample of the final effluent was split with the Collis Company laboratory for analysis. The writer's portion of the split sample was prepared and sent to the Des Moines branch of the University Hygienic Laboratory for analysis. A copy of that analysis is attached to this report. The results are compared in the following table. All results reported as mg/l.

IOWA DEPARTMENT OF VIRON NTAL QUALITY

SANITARY LANDFILL INSPECTION ☐
WATER SUPPLY INSPECTION ☐
WASTEWATER TREATMENT FACILITY INSPECTION ☒
AIR QUALITY INSPECTION ☐

23-26-1-00
Facility/Permit #

ITEM CODE	COMMENTS AND RECOMMENDATIONS

Parameter	U.H.L.	Collis	Permitted Average	Permitted Maximum
Total Suspended Solids	4	7.4	10	15
Total Cyanide	<0.1	0.13	0.3	0.4
Amenable Cyanide	<0.1	0.0	0.03	0.05
Total Chrome	0.49	0.17	0.25	0.38
Hexavalent Chrome	--	0.0	0.05	0.03
Lead	<0.01	0.01	--	--
Nickel	<0.01	0.06	--	--
Zinc	0.95	0.61	0.50	0.75
Iron	0.06	0.07	--	--
pH	7.3	7.4		

The results compare reasonably well, except for total chrome and zinc analyses.

The total chrome analysis performed by the University Hygienic Laboratory of 0.49 mg/l exceed the maximum effluent limit of 0.38 mg/l and the Collis Company result of 0.17 is less than permitted average limit of 0.25 mg/l.

The University Hygienic Laboratory zinc analysis of 0.95 mg/l exceeds the maximum permitted limit of 0.75 mg/l, while the Collis Company laboratory result of 0.61 mg/l is below the maximum 0.75 mg/l but above the average permit limit of 0.50 mg/l.

The final low pH of 7.3 could be one reason for the chrome and zinc violation, as the pH should be about 8.5 for those metals to precipitate out.

Due to the variance in analyses, determining compliance versus noncompliance, it is recommended that methodology utilized in analyzing chrome and zinc should be carefully reviewed to assure accurate analytical techniques.

A revisit will be made to again split samples to better check on analytical accuracy.

B 3

During the inspection the pH meter was not operating properly. Mr. Tiesman stated it was standardized at least once per week.

Accuracy of the pH meter should be checked. It is possible that new electrodes are needed.

The meter should also be calibrated at the beginning of every day of use.

DEPARTMENT OF ENVIRONMENTAL QUALITY

SANITARY LANDFILL INSPECTION [ ]
WATER SUPPLY INSPECTION [ ]
WASTEWATER TREATMENT FACILITY INSPECTION [X]
AIR QUALITY INSPECTION [ ]

23-26-1-00
Facility/Permit #

ITEM CODE	COMMENTS AND RECOMMENDATIONS
4a, 4d	The pH strip chart indicator recording the pH of the neutralization tank had a pH of 10.0 for about a half hour period during the inspection. It was stated that the low pH chrome treatment system was not operating during that period to help neutralize the high pH cyanide waste stream. An extended duration of high pH discharge from the equalization basin can cause a final effluent pH violation. Better control should be administered in operating pretreatment facilities. During periods when the low pH chrome treated wastes are not discharging into the neutralization tank and a high pH cyanide treatment wastes are discharging, more spent acid should be added to the neutralization tank in an attempt to lower the pH below 9.0. The ORP strip charts for both the cyanide and chrome treatment systems indicated that the chemical reaction time may not be adequate for proper treatment during daily start up, especially with the cyanide wastes. Heavily concentrated solutions are likely contained in the first stage tanks after plant shutdown and maintenance cleanup. A quick start up each morning possibly doesn't allow the necessary reaction time to produce the desired final end product, trivalent chrome or carbon dioxide and nitrogen gas. The reaction time is actually more critical with cyanide treatment. The two stage treatment system is very essential in providing proper treatment of chrome and cyanide wastes; however, the appropriate chemicals and reaction time are necessary to obtain desired treatment. During initial start up each morning the necessary reaction time with appropriate chemical addition for proper treatment is questionable. The twenty-four hour composite samples have not indicated effluent violations lately; however, better treatment could possibly be obtained by providing longer detention time during start up. It is recommended that better control be provided during start up to minimize the peaks registered by the ORP probe. Longer detention time and proper chemical addition should be administered during start up. Samples should be taken during this period and analyzed on the AA unit to help determine the best mode of operation to provide the best quality effluent.
9e, 10a, 10c,	10e When the settling basin was drained for repairs, the excess sludge that wasn't put through the filter press was pumped into the sludge storage

IOWA DEPARTMENT OF VIRON NTAL QUALITY

SANITARY LANDFILL INSPECTION ☐
WATER SUPPLY INSPECTION ☐
WASTEWATER TREATMENT FACILITY INSPECTION [X]
AIR QUALITY INSPECTION ☐

23-26-1-00
Facility/Permit #

ITEM CODE	COMMENTS AND RECOMMENDATIONS
	lagoons. The lagoons were observed bank full with no freeboard. It was apparent that sludge had washed out of the corner of one of the lagoons. There was a green colored liquid trail draining from the lagoon area off plant property under the adjacent railroad tracks toward Mill Creek. The green colored trail probably contained chrome washed from the lagoons. With little or no freeboard in the lagoons, a moderate rainfall within the confines of the lagoons would cause an overflow draining toward Mill Creek. The sludge lagoons should maintain at least a one foot freeboard. No more sludge should be placed into the lagoons until they have been cleaned. A layer of sludge should be removed and properly disposed, or necessary measures should be taken to prevent the lagoons from overflowing, possibly discharging chrome and zinc into Mill Creek. The discharging of the sludge lagoon wastes as observed represents a source of contamination to a source of water. The existing situation, if allowed to continue without corrective actions taken, must be considered a violation of Subrule 400--26.2(2) (455B) I. A. C., private solid waste disposal creating a public health hazard, potentially degrading a water resource. This matter is being referred to Rexford A. Walker, Chief of Air and Land Quality, Surveillance Division, State Department of Environmental Quality, Des Moines. Controlling runoff from the sludge lagoons is strongly recommended to prevent further follow up and possible future legal actions from being necessary.
11c, 11d	An elapsed time (ET) meter had been installed on the lift pumps pumping from the neutralization basin to the settling basin. One meter has been installed for both pumps. It was reported that only one pump operates at a time and that they are alternated one at a time. Both pumps do not pump at the same rate. The flow rates of both pumps should be individually calibrated. Separate meters for each pump is a more desirable way to keep track of pumping times for each pump. Both pumps should be calibrated, the accuracy of flow meaasurement should be determined and a report submitted to this Department for review. If ET meters do not provide accurate flow results, an alternate method of flow measurement should be considered.

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SANITARY LANDFILL INSPECTION /_/
WATER SUPPLY INSPECTION /_/
WASTEWATER TREATMENT FACILITY INSPECTION /X/
AIR QUALITY INSPECTION /_/

23-26-1-00
Facility/Permit #

ITEM CODE	COMMENTS AND RECOMMENDATIONS

Summary of Recommendations

1. Analytical methodology for chrome and zinc analyses should be reviewed. A sampling revisit will be made.

2. A minimum freeboard of one foot should be maintained in sludge lagoons and prevented from overflowing, draining into Mill Creek.
   Note: Potential violation of Subrule 400--26.2(2) (455B) I.A.C. Referred to Rexford A. Walker, Chief, A&LQD Surveillance.

3. Elapsed time meters should be supplied for both lift pumps. Both pumps should be individually calibrated. If accurate results cannot be obtained, an alternate method for flow measurement should be considered.

4. pH meter should be calibrated at the beginning of every day of use.

5. Better control should be administered during initial start up of cyanide and chromate waste treatment systems.

6. Analytical results should be reported as less than minimum detection limit, if no measurable quantity is detected.

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WATER QUALITY REPORT

STATE HYGIENIC LABORATORY, Des Moines Branch
H.A. WALLACE BUILDING
DES MOINES, IOWA 50309

Town	Clinton		
Source	Collis Company		
Specific Location	Discharge 001		
Date Collected	9/13/78		
Date Received	9/14/78		
Lab. Number	1752		
		FIELD DATA	
Collection Time	2:00 pm		
pH			
Temperature			
Dissolved Oxygen			
	BACTERIOLOGICAL EXAMINATION		
Fecal Coliform/100 ml			
	CHEMICAL ANALYSIS (as mg/l unless designated otherwise)		
Conductance (micromhos)			
MBAS (as LAS)			
pH (units)	7.3		
Alkalinity: P			
T			
NITROGEN: Organic N			
Ammonia N			
Nitrite N			
Nitrate N			
Nitrate as NO_3			
RESIDUE: Total			
Fixed			
Volatile			
Filtrable Residue T			
F			
V			
Nonfiltrable Residue T	4		
F			
V			
Settleable Matter (ml/l)			
PHOSPHATE: Filtrable P			
Total P			
Dissolved Oxygen			
BOD			
COD			
Grease or Oil			
Turbidity (JTU)	4		
Total Hardness (as $CaCO_3$)			
Calcium (Ca^{++})			
Magnesium (Mg^{++})			
Iron	0.06		
Cyanide	<0.1		
Amenable Cyanide	<0.1		
Bottle #	4, mason jars		

REMARKS:

COLLECTOR REPORT TO: Hoambrecker
DEQ, Region 6
Washington, Ia.

W.J. HAUSLER, JR., Ph.D.
DIRECTOR

OCT 4 1978

1133

WATER QUALITY REPORT
METALS

STATE HYGIENIC LABORATORY, Des Moines Branch
The University of Iowa
515-281-5371

Town	Clinton		
Source	Collis Company		
Specific Location	Discharge 001		
Date Collected	9/13/78		
Date Received	9/14/78		
Lab Number	1752		

METALS ANALYSIS (as mg/l unless designated otherwise)

Arsenic			
Barium			
Cadmium			
Chromium, Total	0.49		
Chromium, Hexavalent			
Copper			
Lead	<0.01		
Mercury			
Nickel	<0.1		
Selenium			
Silver			
Zinc	0.95		

REMARKS:

COLLECTOR
REPORT TO

Date Reported OCT 4 1978

W.J. Hausler Jr., Ph.D.
Director